



SPECIFICALLY TARGETED ANTIBODY AGENT,
COMPOSITION, KIT & RELATED USES

BACKGROUND OF THE INVENTION

Related Patents

This application is a divisional of US Patent Application Serial No. 08/482,596, filed June 7, 1995, which has been allowed; which in turn is a divisional of USSN 08/162,402 filed December 3, 1990, now US Patent No. 5,972,337; which is a continuation-in-part of USSN 07/607,538, now US Patent No. 5,455,031.

Technical Field

This invention relates to a polypeptide having the antibody binding specificity of the 46 kDalton HMFG differentiation antigen, a polynucleotide, and a polyribonucleotide encoding it, anti-polypeptide antibodies, methods of detecting the polypeptide and DNA and RNA encoding it, a method of imaging cells expressing the polypeptide, a method of detecting the presence of the polypeptide in a biological fluid by binding the antibody to the polypeptide, in vivo and ex vivo methods of delivering a therapeutic agent to a target cell expressing the polypeptide, a fusion protein of the polypeptide and at least one other polypeptide, labeled polynucleotides and polyribonucleotides encoding the polypeptide and a complementary DNA sequence, method of detecting RNA and DNA by hybridization with labeled probes, a method of vaccination with the polypeptide, and method of treating breast cancer with an anti-sense DNA.

**WHAT IS SEEKED TO BE PATENTED AS NOVEL & UNOBVIOUS
IN LETTERS PATENT OF THE UNITED STATES IS:**

52. (Canceled)

53. (Canceled)

54. (Canceled)

55. (Canceled)

56. (Canceled)

57. (Canceled)

58. (Canceled)

59. (Canceled)

60. (Canceled)

61. (Canceled)

62. (Canceled)

63. (Canceled)

64. (Canceled)

65. (Canceled)

66. (Canceled)

81. (Amended) An in vivo method of imaging a cancer of epithelial origin or cells expressing a polypeptide having the antibody binding specificity of the about 46 Kd differentiation Human Milk Fat Globule (HMFG) antigen, comprising

administering to a subject suspected of being afflicted with the cancer or carrying the cells an amount of a detectably labeled or unlabeled specifically targeted antibody, comprising a monoclonal antibody selectively binding a 46 Kd MW HMFG differentiation antigen that has an antigen affinity constant about 10^{10} - 10^5 M^{-1} , and an agent comprising a detectable label, the antibody and the agent being operatively linked to one another, under conditions effective to deliver the antibody to target cells of epithelial origin carrying at least a portion of the 46Kd MW HMFG differentiation antigen in the subject's body to form antibody-cell antigen complexes;

administering to the subject a detectably labeled agent that binds the antibody at a site other than the 46 kDalton HMFG polypeptide binding site if the antibody is unlabeled; and detecting the presence of a label in the subject's body.

82. (Amended) The method of claim 81, wherein the antibody is administered intravenously, intraperitoneally, intracavitarily, intra-tumor, intramuscularly, or into the lymphatic system.

83. (Amended) The method of claim 81, wherein the labeled agent comprises a fluorescent or radiolabeled agent.

84. (Amended) The method of claim 81, wherein the antibody comprises an unlabeled antibody; and the labeled agent comprises a labeled anti-antibody immunoglobulin, antibody binding fragment thereof, protein A, or Protein C.

85. (Amended) The method of claim 81, further comprising upon label detection the delivery of a therapeutic agent to target cancerous cells or cells of epithelial origin by binding a therapeutic agent to the antibody of claim 81, at a site other than its antigen binding site;

administering to the subject a therapeutically effective amount of the antibody-bound therapeutic agent under conditions effective for the antibody to deliver the agent to the target cells; and

allowing the antibody to bind to the target cells, and the therapeutic agent to exert its effect on the cells.

86. (Canceled)

87. (Canceled)

88. (New) The method of claim 81, wherein the labeled agent comprises a radionuclide, a fluorescent label, an enzyme or biotin.

89. (New) The method of claim 81, wherein the labeled agent is detected as a conjugate.

90. (New) The method of claim 89, wherein the antibody is conjugated to avidin, streptavidin, or a magnetic bead.
91. (New) The method of claim 81, wherein the antibody comprises a monoclonal antibody.
92. (New) The method of claim 81, wherein the antibody is provided as a composition with a non -proteolytic carrier.
93. (New) The method of claim 92, wherein the carrier comprises a biologically acceptable carrier.
94. (New) The method of claim 93, wherein the carrier comprises a pharmaceutically acceptable carrier.
95. (New) The method of claim 85, wherein the therapeutic agent comprises a radionuclide, an immunotoxin, or an enzyme.
96. (New) The method of claim 85, wherein the antibody-therapeutic agent is delivered as a conjugate.
97. (New) The method of claim 96, wherein the antibody-therapeutic agent is conjugated to avidin, streptavidin, or a magnetic bead.
98. (New) The method of claim 85, wherein the antibody-therapeutic agent comprises a monoclonal antibody.
99. (New) The method of claim 85, wherein antibody-therapeutic agent is provided as a composition with a non proteolytic carrier.
100. (New) The method of claim 99, wherein the antibody-therapeutic agent carrier comprises a biologically acceptable carrier.
101. (New) The method of claim 100, wherein the antibody-therapeutic agent carrier comprises a pharmaceutically acceptable carrier.

Table 2: Comparison of Derived BA46-1 Amino Acid Sequence with C-terminal Human Serum Factors V and VIII

46 Kda	F	I	H	D	V	N	K	K	H	K	E	F	V	G	N	W	N	K	N	A	V	H	V	N	L				
FAV	F	K	G	N	S	T	R	N	V	M	Y	F	N	G	N	S	D	A	S	T	I	K	E	N	Q				
FAVIII	Y	R	G	N	S	T	G	T	L	M	V	F	F	G	N	V	D	S	S	G	I	K	H	N	I				
F	E	T	P	V	E	A	Q	Y	V	R	L	Y	P	T	S	C	H	T	A	C	T	L	R	F	E	L	L	G	
F	D	P	P	I	V	A	R	Y	I	R	I	S	P	T	R	A	Y	N	R	P	T	L	R	L	E	L	G	K	
F	N	P	P	I	I	A	R	Y	I	R	L	H	P	T	H	Y	S	I	R	S	T	L	R	M	E	L	M	G	
C	E	L	N	G	C	A	N	P	L	G	L	K	N	N	S	I	P	D	K	Q	I	T	A	S	S	S	Y	K	
C	E	V	N	G	C	S	T	P	L	G	M	E	N	G	K	I	E	N	K	Q	I	T	A	S	S	S	F	K	K
C	D	L	N	S	C	S	M	P	L	G	M	E	S	K	A	I	S	D	A	Q	I	T	A	S	S	S	Y	F	T
T	W	G	L	H	L	F	S	W	N	P	S	Y	A	R	L	D	K	Q	G	N	F	N	A	W	V	A	G	S	
S	W	W	G	D	Y	-	-	W	E	P	F	R	A	R	L	N	A	Q	G	R	V	N	A	W	Q	A	K	A	
N	M	F	A	T	-	-	-	W	S	P	S	K	A	R	L	H	L	Q	G	R	S	N	A	W	R	P	Q	V	
Y	G	N	D	Q	W	L	Q	V	D	L	G	S	S	K	E	V	T	G	I	I	T	Q	G	A	R	N	F	G	
N	N	N	K	Q	W	L	E	I	D	L	L	K	I	K	K	I	T	A	I	I	T	Q	G	C	K	S	L	S	
N	N	P	K	E	W	L	Q	V	D	F	Q	K	T	M	K	V	T	G	V	T	T	Q	G	V	K	S	L	L	
S	V	Q	F	V	A	S	Y	K	V	A	Y	S	N	D	S	A	N	W	T	E	Y	Q	D	P	R	T	G	S	
S	E	M	Y	V	K	S	Y	T	I	H	Y	S	E	Q	G	V	E	W	K	P	Y	R	L	K	S	S	M	V	
T	E	M	Y	V	K	E	F	L	I	S	S	S	Q	D	G	H	Q	W	T	L	F	F	Q	N	-	-	G	K	
S	K	I	F	P	G	N	W	D	N	H	S	H	K	K	N	L	F	E	T	P	I	L	A	R	Y	V	R	I	
D	K	I	F	E	G	N	T	N	T	K	G	H	V	K	N	F	F	N	P	P	I	I	S	R	F	I	R	V	
V	K	V	F	Q	G	N	Q	D	S	F	T	P	V	V	N	S	L	D	P	P	L	L	T	R	Y	L	R	I	
L	P	V	A	W	H	N	R	I	A	L	R	L	E	L	L	G	C											(SEQ. No. 3)	
I	P	K	T	W	N	Q	S	I	A	L	R	L	E	L	F	G	C	D	-	-	-	I	Y						(SEQ. No. 4)
H	P	Q	S	W	V	H	Q	I	A	L	R	M	E	V	L	G	C	E	A	Q	D	L	Y						(SEQ. No. 5)

(SEQ. No. 3)

(SEQ. No. 4)

(SEQ. No. 5)

An arrow indicates Junction of C1 and C2 repeats.